

Linux OS



Embedded EPICS IOC



Waveform Generation



Embedded Oscilloscope



Multi-Interface Bipolar  
Digital Voltage- and Current-  
Controlled Fast Power Supply

Your **DIGITAL**  
**POWER ELECTRONICS**  
Partner.



## FAST-PS

- Digital control loop - adapt the power supply to any load condition in both Current- and Voltage-controlled modes
- Stand-alone unit with local control, extended input range and internal self-cooling by air convection
- Embedded Web-Server, 4-channel Oscilloscope and Waveform Generation

### FEATURES

- 19"-1U stand-alone crate
- Models up to 30 A and up to 80 V
- Configurable digital control loop
- Current or Voltage regulation
- <0.005 %/K temperature dependence
- Excellent long-term stability
- Analog Control and Trigger Input - optional
- Fast SFP interface (10 kHz update)
- Waveform Generation at 100 ksps
- Embedded 4-channel Oscilloscope
- Embedded Web-Server
- External Interlock and Status Signals
- Local Display and Controls
- 10/100/1000 Mbit Ethernet

### APPLICATIONS

- Particle Accelerators
- Magnet Power Supply
- Industrial / Plant Operation
- Motor & Magnet Drives
- PV Cell Testing
- Laboratory Equipment
- Medical Imaging

**F**AST-PS. The FAST-PS series is the new generation of bipolar power supplies by ELS Instruments and it is designed in order to have state-of-the-art performances both in current- and voltage-control modes. Models up to  $\pm 30$  A and up to  $\pm 80$  V are available in order to satisfy any need.

The embedded Web-Server makes controlling of these power units straightforward. Features like a 4-channel oscilloscope and a waveform generator can be easily accessed via the GUI and be used for control and monitoring, without the need of having external physical devices - e.g. oscilloscope and waveform generator units.

The **10/100/1000 Ethernet** connection over TCP-IP or UDP and the two SFP slots allow controlling the power converter in different modes.

The control loop, as for all ELS

Instruments' power supplies, is digital in order to obtain the maximum flexibility and easiness of configuration to any connected load - e.g. resistive, capacitive or inductive.

The FAST-PS can be controlled either in current- or voltage-control modes (or mixed) and both control loops can be remotely configured.





Internal protections - e.g. over-voltage, over-current, earth current leakage - are implemented as well as external interlocks are present. Features like **waveform**, triggers, etc. are also included in these state-of-the-art units that embed a Linux OS to give the maximum flexibility.

The units can be also locally controlled via a display and a local interface in order to set and monitor the main parameters and the status of the power supply. Trigger and Analog Control inputs are available as ordering options.



### About Us

ELS Instruments (formerly CAEN ELS) is a leading company in the design of power supplies and state-of-the-art complete electronic systems for the Physics research world, having its main focus on dedicated solutions for the particle accelerator community and high-end industrial applications.

-  Power Supply Systems
-  Precision Current Measurements
-  Beamline Electronics Instrumentation
-  FMC and MicroTCA

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Embedded WAVEFORM GENERATOR

### Technical Specifications

### FAST-PS

	0520	0540	0580	1020	1040	2020	2040	3020
<b>Output Current Range</b>	±5 A	±5 A	±5 A	±10 A	±10 A	±20 A	±20 A	±30 A
<b>Output Voltage Range</b>	±20 V	±40 V	±80 V	±20 V	±40 V	±20 V	±40 V	±20 V
<b>Rated Output Power</b>	100 W	200 W	400 W	200 W	400 W	400 W	600 W	600 W
<b>Output Topology</b>	Bipolar							
<b>Regulation Type</b>	Constant Current (CC) or Constant Voltage (CV)							
<b>Output Current Setting/Readback</b>	24 bit							
<b>Output Voltage Setting/Readback</b>	24 bit							
<b>Switching Frequency</b>	100 kHz							
<b>Closed Loop Bandwidth (-3 dB)</b>	5 kHz	2.7 kHz	1.6 kHz	5 kHz	2.7 kHz	5 kHz	2.7 kHz	5 kHz
<b>Output Accuracy in CC</b>	< 0.05 %							
<b>Output Accuracy in CV</b>	< 0.05 %							
<b>Temperature Stability</b>	< 0.005 %/K							
<b>Long-Term Stability (8 h)</b>	< 0.005 %/FS							
<b>Cooling</b>	Forced air convection							
<b>Input Ratings</b>	90 - 260 V <sub>AC</sub> - 47/63 Hz							
<b>Communication Interfaces</b>	Ethernet 10/100/1000 Mbit TCP-IP and UDP 2 x Fast SFP ports							
<b>External Signals</b>	2 x External Interlock Inputs (configurable dry contacts) 1 x Status Output relay (magnetic)							
<b>Internal Interlocks</b>	DC-Link Undervoltage Over-Temperature Over-Current and Over-Voltage Earth Fault Current Regulation Fault Excessive Current Ripple							
<b>Hardware Protections</b>	Input Fuses Crowbar (Over-Voltage)							
<b>Auxiliary Readbacks (12-bit)</b>	DC-Link Voltage Ground Leakage Current Temperature							
<b>Operating Ambient Temperature</b>	0 ... 50 °C							
<b>Mechanical Dimensions</b>	19" x 1U x 422 mm (including connectors)							
<b>Weight</b>	7 kg	6.5 kg					7 kg	

Ordering Code	Acronym	Description
FASTPS052001	FAST-PS 0520-100	Fast Corrector Current- and Voltage-Controlled Digital Power Supply ±5 A@±20 V (100 W max)
FASTPS054002	FAST-PS 0540-200	Fast Corrector Current- and Voltage-Controlled Digital Power Supply ±5 A@±40 V (200 W max)
FASTPS058004	FAST-PS 0580-400	Fast Corrector Current- and Voltage-Controlled Digital Power Supply ±5 A@±80 V (400 W max)
FASTPS102002	FAST-PS 1020-200	Fast Corrector Current- and Voltage-Controlled Digital Power Supply ±10 A@±20 V (200 W max)
FASTPS104004	FAST-PS 1040-400	Fast Corrector Current- and Voltage-Controlled Digital Power Supply ±10 A@±40 V (400 W max)
FASTPS202004	FAST-PS 2020-400	Fast Corrector Current- and Voltage-Controlled Digital Power Supply ±20 A@±20 V (400 W max)
FASTPS204006	FAST-PS 2040-600	Fast Corrector Current- and Voltage-Controlled Digital Power Supply ±20 A@±40 V (600 W max)
FASTPS302006	FAST-PS 3020-600	Fast Corrector Current- and Voltage-Controlled Digital Power Supply ±30 A@±20 V (600 W max)
FASTPSACINXA	FAST-PS AN-CTRL	Analog Control Input (±10 V) on BNC connector - optional
FASTPSTRINXA	FAST-PS TRG-IN	Trigger Input on BNC connector - optional
FASTPSHSXAAA	FAST-PS HS	High-Stability option with embedded 0-FLUCS DCCT - optional